1850MNRAS..11....2H

Liverpool. Equatoreal. (Mr. Hartnup.)

1850.	Greenwich M.T.	R.A.	Log $\frac{p}{P}$	N.P.D.	Log $\frac{q}{P}$
	h m s	h m s		° ′ ″	
Nov. 16	9 37 11·8	1 47 37·22	−7·845	81 33 11·6	−9·8464
—	9 57 8·2	36·34	−7·545	8·6	9·8471
—	10 17 4·4	35·62	Mer.	5·3	9·8469
Nov. 21	9 50 14·5	1 43 25·02	−6·722	81 18 55·4	9·8450
—	10 5 11·8	34·38	+7·324	53·4	9·8451
—	10 20 9·4	23·94	+7·675	51·4	9·8453
Nov. 23	8 20 8·3	1 41 57·51	−8·160	81 12 44·1	9·8479
—	8 35 5·4	56·95	−8·077	40·7	9·8467
—	8 50 2·6	56·36	−7·973	38·2	−9·8458

The star of comparison for all the observations was *ο Piscium*. The adopted mean place derived from the Greenwich 12-Year Catalogue is as follows:—

	Mean R.A. 1850·0.	Mean N.P.D. 1850·0.
	h m s	° ′ ″
ο Piscium	1 37 28·68	81 35 57·18

THE NEW PLANET VICTORIA.

Letter from Mr. Hind, Sept. 13, 1850.

"I hasten to announce to you my discovery of another new *planet* this evening, at 10ʰ 10ᵐ M.T. in *Pegasus*. Rough reductions give,—

1850.	Green. M.T.	R.A.	Decl.
	h m s	h m s	° ′ ″
Sept. 13	10 12 9	23 43 56·65	......
	11 18 50	54·32	+13 49 45·2
	11 41 38	23 43 53·20	+13 49 34·2

"The first observation of declination *doubtful*. The planet is a full 9th magnitude, and to my eye somewhat blueish.

"*September* 16.

"By a very vexatious mistake in using the wrong comparison star, my places of the planet were thrown wrong. The following are the corrected observations:—

	Green. M.T.	R.A.	Decl.
	h m s	h m s	° ′ ″
Sept. 13	11 29 36	23 44 45·08	+14 6 42·9
14	8 28 24	23 44 2·56	+13 59 29·3

"It is fully as bright as stars of the 8th mag. I have called the new planet *Victoria*, for which I have devised, as a symbol, a star and laurel branch, emblematic of the Goddess of Victory."

The above extracts are taken from Mr. Hind's letters, written at the time. The following more particular account has since been received:—

"About ten o'clock on the evening of the 13th of September I discovered a new planet in the constellation *Pegasus*. I was

1850MNRAS..11....2H

occupied, at the time, in a close comparison of a chart for Hour xxiii. with the heavens, re-examining the small stars inserted in previous years, to ensure their being placed in the right position upon the map, and to ascertain if any change of magnitude, &c. had taken place; for it has always appeared to me very desirable that every variable star should be duly specified in forming a chart. Near one of the tenth magnitude, entered in 1848, I found another brighter object, which was at once suspected to be a planet, as it could hardly have escaped my previous sweeps over the vicinity. At $21^{h}\,41^{m}$ sidereal time at Mr. Bishop's observatory, it preceded my star of the tenth magnitude $14^{s}{\cdot}45$, while, on repeating the transits over the vertical wire of the micrometer at $22^{h}\,30^{m}$, the difference of right ascension was $16^{s}{\cdot}30$; and the motion thus indicated was confirmed by observations continued till $23^{h}\,15^{m}$, when the interval between the transits was $17^{s}{\cdot}95$. No doubt, therefore, could exist as to the planetary nature of the stranger; and its position in the solar system was clearly shown by the amount and direction of the diurnal motion. The Astronomer Royal has kindly determined the accurate position of the small star, which I compared with the planet, and has given me the following results, depending upon five transit observations and four observations with the mural circle :—

Mean R.A. 1850, $23^{h}\,44^{m}\,59^{s}{\cdot}64$ Mean N.P.D. $75^{\circ}\,41'\,44''{\cdot}85$
App. R.A. Sept. 13, 23 45 2·39 App. N.P.D. 75 41 28·2

The micrometric comparisons give the following position of the planet :—

1850.	Greenwich M.T. h m s	R.A. h m s	N.P.D. ° ′ ″
Sept. 13	11 29 36	23 44 45·19	75 53 17·1

Observations.

ALTONA. (Prof. Schumacher and Dr. Petersen.)

1850.	Altona M.T. h m s	R.A. ° ′ ″	Decl. ° ′ ″	
Sept. 25	11 35 41	353 46 14	+12 10 55·2	Eq.
30	10 54 19·7	352 52 38·3	11 16 48·8	Mer.
Oct. 2	45 9·9	352 33 5·9	10 54 39·4	—
6	27 7·2	351 58 11·9	10 10 15·2	—
7	22 40·1	50 24·0	9 59 17·1	—
8	18 14·9	43 3·5	9 48 18·5	—
9	10 13 51·3	351 36 6·6	+ 9 37 25·4	—

BERLIN. (Prof. Encke and Dr. Galle.)

	Berlin M.T. h m s	R.A. ° ′ ″	Decl. ° ′ ″	
Sept. 20	9 11 53·6	354 46 37·2	+13 3 56·4	Equat.
	11 41 9·6	45 17·7	2 49·6	Merid.
21	9 47 18·0	354 34 14·8	12 53 33·7	Equat.
	11 36 25·5	33 11·3	52 50·8	Merid.
27	11 8 15·0	353 24 13·8	+11 49 46·1	Merid.
	11 22 40·0	24 13·6	49 39·8	Equat.

1850MNRAS..11....2H

Breslau. (Prof. von Boguslawski.)

1850.	Green. M.T.	R.A.	Decl.	
	h m s	h m s	° ′ ″	
Sept. 29	8 27 49·9	23 32 15·19	+11 28 46·0	Diff^l. Microm.

Hamburg. (M. Rümker.)

1850.	Hamburg M.T.	R.A.	Decl.	
	h m s	° ′ ″	° ′ ″	
Sept. 20	10 16 50·6	354 45 18·0	+13 3 4·4	
25	8 23 15·8	353 47 45·3	12 12 25·8	
	11 17 37·9	......	11 11·0	Mer. Circ.
26	8 39 5·4	353 36 18·3	12 1 43·6	
	11 12 52·4	35 4·8	0 35·2	Mer. Circ.
28	8 38 3·0	353 14 30·5	11 39 52·3	
29	8 3 26·0	353 4 12·2	11 29 14·3	
30	9 54 35·7	352 53 3·8	11 17 13·8	
	10 54 20·4	52 38·1	16 46·3	Mer. Circ.
Oct. 1	7 32 35·5	352 44 7·5	11 7 21·3	
2	8 7 20·0	352 34 8·7	10 56 1·9	
	10 45 10·0	......	54 38·5	Mer. Circ.
6	7 42 49·1	351 59 7·0	10 11 35·7	
	10 27 7·0	58 15·0	10 16·4	Mer. Circ.
7	8 34 29·0	351 51 2·5	10 0 9·7	
	10 22 39·8	50 23·3	9 59 16·8	Mer. Circ.
8	8 37 14·0	351 43 48·8	9 49 12·6	
	10 18 14·6	43 3·2	48 17·5	Mer. Circ.
9	8 10 8·8	351 36 45·9	9 38 30·5	
	10 13 50·8	36 3·5	37 24·6	Mer. Circ.
10	7 19 4·0	351 30 22·8	9 27 55·4	
	10 9 28·5	29 26·0	26 46·3	Mer. Circ.
12	7 33 27·2	351 18 26·8	9 6 21·2	
13	7 10 38·1	351 13 5·0	8 56 8·2	
21	10 32 0·4	350 46 56·2	7 36 6·2	
31	10 47 20·0	350 56 56·4	+ 6 15 46·0	

With the Transit Instrument. (M. G. Rümker.)

	Hamburg M.T.	App. R.A.		Hamburg M.T.	App. R.A.
	h m s	° ′ ″		h m s	° ′ ″
Sept. 26	11 12 52	353 35 5·0	Oct. 7	10 22 40	351 50 21·3
Oct. 2	10 45 10	352 33 9·2	9	13 51	36 4·5
6	10 27 7	351 58 14·0	10	10 9 28	351 29 25·8

Markree. On the Meridian.

	Green. M.T.	R.A.	Decl.	
	h m s	h m s	° ′ ″	
Sept. 17	12 22 55	23 41 24·62	+13 31 5·4	+ [0·7444] ÷ Δ.

Haverhill. (Mr. W. W. Boreham.)

	Green. M.T.	R.A.	N.P.D.
	h m s	h m s	° ′ ″
Oct. 1	11 20 25	23 30 48·87 +0·056 P	78 54 50·3 +0·657 P

1850MNRAS..11....2H

LIVERPOOL. Equatoreal. (Mr. Hartnup.)

1850.	Green. M.T.	R.A.	Log $\frac{p}{P}$	N.P.D.	Log $\frac{q}{P}$.	Star of Comp. B.A.C.
	h m s	h m s		° ′ ″		
Sept. 17	11 52 12·1	23 41 26·03	−7·4279	76 28 36·9	−9·8045	8182—8370
	12 47 0·8	24·02	+7·8520	28 57·8	·8060	— —
21	10 0 31·2	38 14·14	−8·2683	77 6 50·3	·8197	8182
	10 50 22·1	12·78	−8·0098	7 12·5	·8129	—
26	9 33 1·0	34 22·67	−8·2814	77 59 3·7	·8274	—
	9 52 57·5	21·79	−8·2026	59 10·9	·8239	—
	10 12 53·8	21·06	−8·0997	59 20·1	·7950	—
28	10 9 34·4	32 53·97	−8·0626	78 21 3·8	·8342	—
	10 29 30·4	53·24	−7·9088	21 16·4	·8225	—
	10 49 26·8	52·61	−7·6630	21 25·6	·8215	—
Oct. 1	12 17 17·3	30 47·15	+8·1210	78 55 13·7	·8298	—
	12 37 13·8	46·91	+8·2177	55 22·8	·8322	—
4	10 27 56·9	28 59·10	−7·5478	79 27 48·4	·8305	—
	10 47 53·3	58·78	Mer.	27 57·9	·8304	—
5	8 55 42·5	28 27·17	−8·2643	79 38 13·9	·8391	—
	9 15 39·0	26·78	−8·1808	38 19·9	·8328	—
11	7 47 22·7	25 35·48	−8·3903	80 43 19·4	·8527	8250
	8 7 19·4	35·11	−8·3361	43 28·0	·8498	—
	8 27 15·8	34·94	−8·2703	43 36·1	·8471	—
21	11 24 55·2	23 7·16	+8·2684	82 24 24·4	·8586	8078
	11 54 50·6	6·91	+8·3625	24 34·4	·8619	—
	12 26 45·9	6·66	+8·4377	24 47·7	·8660	—
23	8 37 21·9	23 1·20	−7·9391	82 41 12·1	·8564	8233
	57 18·8	1·11	−7·7194	41 19·3	·8557	—
26	8 51 34·6	23 4·49	−7·5639	83 6 27·4	·8586	—
	9 11 31·9	4·66	−6·8443	6 34·6	·8584	—
Nov. 2	7 21 24·5	24 16·07	−8·1761	83 56 55·2	·8671	—
	7 41 21·6	16·20	−8·0685	57 0·5	·8660	—
8	7 39 53·3	26 27·03	−7·9200	84 31 26·2	·8691	—
	7 59 50·7	27·54	−7·6879	31 28·7	·8680	—
12	8 6 4·4	23 28 28·30	−7·1448	84 49 34·0	·8705	—
	22 2·1	28·70	+7·1448	49 38·2	·8705	—
	8 38 0·3	28·98	+7·6212	49 39·1	−9·8706	8233

"The observations are corrected for refraction. The corrections to be applied for parallax in time and arc are represented by *p* and *q*. P is the equatoreal horizontal parallax.

Assumed Mean Places of Stars of Comparison, 1850·0.

	R.A.	N.P.D.	Authority.
	h m s	° ′ ″	
B.A.C. 8078	23 4 9·78	82 5 36·3	Edinburgh Observations.
— 8182	21 34·28	78 3 57·9	— —
— 8233	32 14·40	85 11 10·7	Greenwich 12-year Catalogue.
— 8250	35 44·44	80 30 3·3	Edinburgh Observations.
— 8370	23 58 0·26	77 26 17·4	— —

1850MNRAS..11....2H

DURHAM. Fraunhofer Equatoreal. (Mr. R. C. Carrington.)

1850.	Greenwich M.T.	App. R.A.		App. N.P.D.		No. of Comps. in R.A.	No. of Comps. in N.P.D.	Set.
	h m s	h m s	s	° ′ ″	″			
Sept. 16	15 34 39·4	23 42 7·61	+0·031 *p*	76 20 54·9	−0·707 *p*	18	6	(1)
17	12 10 55·5	41 25·18	+0·002 *p*	76 28 48·7	0·656 *p*	15	5	(2)
26	9 23 4·5	34 23·25	−0·019 *p*	77 58 57·7	0·690 *p*	10	10	(3)
	10 24 41·4	21·18	−0·009 *p*	59 24·4	0·679 *p*	11	4	(4)
28	9 51 26·9	32 54·51	−0·013 *p*	78 20 54·6	0·686 *p*	15	5	(5)
30	8 59 38·2	31 32·98	−0·020 *p*	78 42 36·7	0·700 *p*	16	8	(6)
Oct. 1	10 25 57·0	30 50·34	−0·005 *p*	78 54 24·7	0·688 *p*	14	5	(7)
5	8 24 44·1	28 27·75	−0·021 *p*	79 38 2·7	0·713 *p*	24	8	(8)
8	10 3 32·9	26 51·57	−0·004 *p*	80 11 53·2	0·703 *p*	15	5	(9)
9	8 11 21·6	26 25·94	−0·021 *p*	80 21 41·0	0·720 *p*	15	5	(10)
11	10 52 19·1	25 32·14	+0·007 *p*	80 44 45·6	0·713 *p*	8	8	(11)
14	8 45 18·4	24 31·22	−0·012 *p*	81 15 15·2	0·721 *p*	24	8	(12)
	11 33 59·4	28·93	+0·016 *p*	16 26·4	0·724 *p*	24	8	(13)
23	10 52 38·3	23 0·20	+0·015 *p*	82 41 58·8	0·739 *p*	8	8	(14)
	11 51 52·6	0·79	+0·024 *p*	42 21·7	0·748 *p*	12	4	(15)
26	13 26 56·8	23 5·45	+0·035 *p*	83 7 57·0	0·778 *p*	18	6	(16)
28	8 5 13·3	23 15·51	−0·009 *p*	83 21 53·5	0·743 *p*	15	5	(17)
29	8 5 54·9	23 23·83	−0·009 *p*	83 29 26·3	0·744 *p*	24	8	(18)
30	7 57 15·9	23 23 33·89	−0·009 *p*	83 36 40·4	−0·746 *p*	24	8	(19)

p = Equatoreal Horizontal Parallax in *arc*.

Assumed Apparent Places of Stars of Comparison.

Name.	R.A.	N.P.D.	Set.
	h m s	° ′ ″	
Anonymous, 10th Magnitude	23 46 57·94	76 13 49·8	(1)
Anonymous, the same star,	46 57·95	76 13 49·7	(2)
Weisse 23^h, 712	34 27·03	78 4 54·0	(3)
— 630	30 28·97	77 56 39·9	(4)
— 568	27 38·29	78 9 32·0	(5)
— 647	31 20·23	78 37 47·2	(6)
— 656	31 46·25	79 3 2·1	(7)
— 605	29 24·17	79 48 35·3	(8)
— 596	28 40·25	80 19 4·5	(9)
B.A.C. 8250	35 47·25	80 29 46·0	(10)
Anonymous, 10th Magnitude	25 51·30	80 47 17·0	(11)
Anonymous, 7·8th Magnitude	23 21·38	81 20 14·5	(12)
B.A.C. 8234	32 19·45	81 8 51·3	(13)
Weisse 23^h, 469	23 19·75	82 49 26·0	(14)
— 395	19 44·33	82 45 13·3	(15)
— 452	22 20·76	83 0 3·3	(16)
— 710	34 20·94	83 34 25·7	(17)
— 524	24 37·71	83 44 5·8	(18)
— 524	23 24 37·70	83 44 5·8	(19)

1850MNRAS..11....2H

The star of Sept. 16 and 17 depends on approximate equatoreal comparisons only, and requires re-observation. It has a companion of the same magnitude, north preceding.

Oct. 9. Sky very unsettled.

Oct. 11. Star's place only approximate, derived from single comparisons with B.A.C. 8250 and Weisse 23^h, 477.

Oct. 14. Set 12. Star's place is derived from the mean of a satisfactory equatoreal comparison with B.A.C. 8234 and one meridian observation, it ought to be pretty accurate.

Oct. 26. The sky did not clear till midnight, but was very clear afterwards.

Oct. 29 and 30. There is an error in Weisse's catalogue here. No. 524 is 1^m in excess in R.A., and the precessions accordingly slightly in error. Making these alterations, I find by one meridian observation that the assumed apparent place is perfectly correct.

Oct. 30. The observed differences in R.A. were rather irregular: the sky was full of vapour, and the planet at times very dim.

NAPLES. Equatoreal. (Sig. Annibale de Gasparis.)

1850.	Naples M.T. h m s	R.A. ° ′ ″	Decl. ° ′ ″
Sept. 24	7 59 13·3	354 0 18·1	+12 23 47·8
26	8 7 24·4	353 37 20·6	12 2 20·8
27	8 52 46·6	353 25 52·8	+11 51 5·7

HARTWELL. Equatoreal. (Professor C. P. Smyth.)

1850.	Hartwell Sid. T. h m	R.A. Planet—Star. s		Obs.	Dec. Planet—Star. ′ ″		Obs.	Star.
Oct. 5	2 50	+ 5·0		6	0 0·0			*a*
8	2 8	+38·0	±·07	3				
	2 0				−2 56·1	±0″·8	3	*b*
	2 8	+ 1·3	±·03	3				
	2 0				−4 19·0	±0 ·7	3	*c*

The planet appeared as a star of the 9th magnitude.

Approximate Places of Stars of Comparison.

		h m s	° ′
a	10 mag.	α = 23 28 13	δ + 10 21
b	9 —	23 25 55	9 52
c	9 —	23 26 32	+ 9 53

Elements.

I. By Mr. G. Rümker, of Hamburg.

Epoch 1850, Sept. 13^d·0, Greenwich Meridian.

	° ′ ″	
M	35 45 24·7	
ϖ	301 42 56·6	Mean Eq. 1850·0.
☊	235 32 52·6	
i	8 22 45·5	
φ	12 39 8·5	
Log *a* ...	0·3683999	
e	0·2190350	
Log μ ...	2·9974067	μ = 994″·046

The above depend on the first observation of the planet in London, Sept. 13, and the Hamburg observations of Sept. 30 and Oct. 13.

1850MNRAS..11....2H

II. By Mr. Fearnley, of Christiania (now at Bonn). Founded on the London observations, Sept. 14, and those at Bonn, by Professor Argelander, on Sept. 26 and Oct. 7.

Epoch 1851, Jan. 0·0, Berlin Meridian.

	°	′	″	
M	65	51	36·06	
π	301	43	48·55	Mean Eq. 1851, Jan. 0.
☊	235	48	45·21	
i	8	19	29·05	
φ	12	42	55·23	
Log. *a*	0·3672814			

III. *Elements of the Orbit of Victoria*, by Mr. H. Breen, of the Royal Observatory, Greenwich, *deduced from Mr. Hind's Observations of Sept.* 14, *the Mean of the Greenwich and Cambridge Meridian Observations of Sept.* 25, *and the Mean of the Greenwich and Altona Meridian Observations of Oct.* 7.

The observations have been corrected for parallax and aberration.

		°	′	″
Mean Anomaly, Sept. 14^{d}·347373, Greenwich Mean Time		36	18	40·6
From Mean Equinox, Jan. 1	Longitude of Perihelion ...	301	14	59·5
	Longitude of Node	235	37	23·7
Inclination		8	22	5·9
Angle of Excentricity		12	46	5·6
Log. *e*		9·3444073		
Log. Semi-axis Major		0·3684648		
Mean Daily Motion		993″·8240		

For the middle observation, these elements are in error,

−0″·4 in Longitude.
+0·3 in Latitude.

IV. *Elements of the Orbit of Victoria*, by M. Yvon Villarceau, *deduced from eleven Meridional Observations made at the Observatory of Paris, from* 1850 *September* 17, *to October* 29. (*In a Letter to the Astronomer Royal.*)

		°	′	″
Mean Anomaly, 1850, October 0·0, Paris Mean Time		40	22	15·1
Reckoned from the Mean Equinox,	Longitude of perihelion.........	301	56	31·9
October 0.	Longitude of ascending node...	235	28	25·3
Inclination		8	23	15·3
Angle (sin = excentricity)		12	35	13·2
Semimajor axis (log = 0·3682639)		2·334877		

From which

Duration of the Sidereal Revolution	3^{yrs}·567767
Mean Diurnal Heliocentric Motion	994″·5135
Excentricity	0·2179220

"These elements have been computed by the process of correction of elements which I have pointed out in Nos. 15, 31, 32, and 33, of my memoir on the deter-

1850MNRAS..11Q...9.

mination of the orbits of planets. I ought only to say that the rapid motion of the planet in latitude has allowed me to apply the formula intended for comets, that is to say, those which require only the differences of the second order inclusively."

PARTHENOPE.

Cambridge, U.S. (Professor Bond.)

1850.	Cambridge M.T.	R.A.	Dec.
	h m s	h m s	° ′ ″
Aug. 26	9 12 40	15 33 0·45	−15 43 51·9
27	7 48 5	15 34 14·45	−15 50 21·9

Reckoned from the mean equinox of 1850, and not corrected for parallax. The planet now appears as a star of the 11th magnitude.

FLORA.

Liverpool. Equatoreal. (Mr. Hartnup.)

1850.	Greenwich M.T.	R.A.	N.P.D.	Compd—Obsd R.A.	Compd—Obsd N.P.D.	Star of Comp. B.A.C.
	h m s	h m s	° ′ ″	s	″	
Sept. 21	12 2 39·3	0 24 40·67	100 1 46·5	+2·81	−20·2	62
28	11 23 8·9	18 40·18	100 53 44·2	2·69	16·9	—
Oct. 1	11 36 39·8	16 2·61	101 13 0·0	2·71	17·9	—
4	11 26 17·3	13 28·62	29 43·9	2·85	14·3	233
5	9 59 46·1	12 41·16	34 31·4	2·80	15·7	200—233
11	9 54 25·7	0 7 58·44	101 58 19·2	+2·68	−14·0	8361

"The observed places are corrected for refraction and parallax.

"The parallax and computed places were deduced from the ephemeris contained in the supplement to the *Nautical Almanac* for 1853.

Assumed Mean Places of Stars of Comparison, 1850·0.

		R.A.	N.P.D.	Authority.
		h m s	° ′ ″	
B.A.C.	62	0 11 47·00	99 39 20·8	Greenw. and Edinburgh Obs.
—	200	0 36 37·45	101 25 37·1	B.A.C.
—	233	0 42 36·89	101 27 10·3	B.A.C.
—	8361	23 56 49·29	101 20 39·1	Edinburgh Observations.

Durham. Fraunhofer Equatoreal. (Mr. R. C. Carrington.)

1850.	Greenwich M.T.	R.A.	Exc. of Eph.	N.P.D.	Exc. of Eph.	No. Comps. R.A.	No. Comps. N.P.D.	Set.
	h m s	h m s	s	° ′ ″	s			
Sept. 30	11 32 57·5	0 16 54·70	+2·93	101 6 47·5	−15·1	3	1	(1)
Oct. 8	11 31 23·6	0 10 12·19	2·82	101 48 4·7	13·7	24	8	(2)
9	12 39 25·6	0 9 23·25	2·83	101 52 2·7	13·6	15	5	(3)
14	14 8 11·4	0 5 45·27	+3·34	102 6 7·1	− 9·8	16	8	(4)
28	11 4 14·0	23 59 26·75		102 0 55·8		24	8	(5)
29	9 56 57·4	23 59 14·42		101 58 19·8		16	8	(6)

The data for parallax and the computed places taken from the supplement to *Nautical Almanac* for 1853.